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TPL14_CPU

AMD Ryzen 3 PRO 4450U testing with a LENOVO 20U6S1SD00 (R19ET32W 1.16 BIOS) and AMD Renoir 512MB on Arch rolling via the Phoronix Test Suite.

Automated Executive Summary

TPL14_CPU_2 had the most wins, coming in first place for 85% of the tests.

The results with the greatest spread from best to worst included:

Kvazaar (Video Input: Bosphorus 4K - Video Preset: Slow) at 1.056x
NAMD (ATPase Simulation - 327,506 Atoms) at 1.054x
Kvazaar (Video Input: Bosphorus 4K - Video Preset: Very Fast) at 1.052x
Stockfish (Total Time) at 1.051x
Kvazaar (Video Input: Bosphorus 4K - Video Preset: Medium) at 1.049x
Kvazaar (Video Input: Bosphorus 1080p - Video Preset: Slow) at 1.049x
Kvazaar (Video Input: Bosphorus 4K - Video Preset: Ultra Fast) at 1.048x
Kvazaar (Video Input: Bosphorus 1080p - Video Preset: Very Fast) at 1.048x
Kvazaar (Video Input: Bosphorus 1080p - Video Preset: Medium) at 1.048x
Blender (Blend File: Barbershop - Compute: CPU-Only) at 1.044x.

Test Systems:

TPL14_CPU

Processor: AMD Ryzen 3 PRO 4450U @ 2.50GHz (4 Cores / 8 Threads), Motherboard: LENOVO 20U6S1SD00 (R19ET28W 1.12 BIOS), Chipset: AMD Renoir Root Complex, Memory: 16GB, Disk: 128GB Western Digital PC SN520 SDAPMUW-128G-1001, Graphics: AMD Renoir 512MB (1400/400MHz), Audio: AMD Device 1637, Network: Realtek RTL8111/8168/8411 + Intel Wi-Fi 6 AX200

OS: Arch rolling, Kernel: 5.9.1-zen2-1-zen (x86_64), Desktop: GNOME Shell 3.38.1, Display Server: X Server 1.20.9 + Wayland, Display Driver: modesetting 1.20.9, OpenGL: 4.6 Mesa 20.2.1 (LLVM 10.0.1), Compiler: GCC 10.2.0 + Clang 10.0.1, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-werror --enable-__cxa_atexit --enable-cet=auto --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++,d --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: acpi-cpufreq schedutil - CPU Microcode: 0x8600106
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

AMD Ryzen 3 PRO 4450U

Processor: AMD Ryzen 3 PRO 4450U @ 2.50GHz (4 Cores / 8 Threads), Motherboard: LENOVO 20U6S1SD00 (R19ET32W 1.16 BIOS), Chipset: AMD Renoir Root Complex, Memory: 16GB, Disk: 512GB INTEL SSDPEKNW512G8 + 2000GB My Passport 25E1, Graphics: AMD Renoir 512MB (1400/400MHz), Audio: AMD Device 1637, Network: Realtek RTL8111/8168/8411 + Intel Wi-Fi 6 AX200

OS: Arch rolling, Kernel: 5.10.16-zen1-1-zen (x86_64), Desktop: GNOME Shell 3.38.3, Display Server: X Server 1.20.9 + Wayland, Display Driver: amd, OpenGL: 4.6 Mesa 20.3.4 (LLVM 11.0.1), OpenCL: OpenCL 1.1 Mesa 20.3.4 + OpenCL 2.0 AMD-APP (3188.4), Compiler: GCC 10.2.0 + Clang 11.0.1, File-System: ext4, Screen Resolution: 3840x1200

Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-werror --enable-__cxa_atexit --enable-cet=auto --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++,d --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0x8600106
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

TPL14_CPU_2

Processor: AMD Ryzen 3 PRO 4450U @ 2.50GHz (4 Cores / 8 Threads), Motherboard: LENOVO 20U6S1SD00 (R19ET32W 1.16 BIOS), Chipset: AMD Renoir Root Complex, Memory: 16GB, Disk: 512GB INTEL SSDPEKNW512G8, Graphics: AMD Renoir 512MB (1400/400MHz), Audio: AMD Device 1637, Network: Realtek RTL8111/8168/8411 + Intel Wi-Fi 6 AX200

OS: Arch rolling, Kernel: 5.10.16-zen1-1-zen (x86_64), Desktop: GNOME Shell 3.38.3, Display Server: X Server 1.20.9 + Wayland, Display Driver: amd, OpenGL: 4.6 Mesa 20.3.4 (LLVM 11.0.1), OpenCL: OpenCL 1.1 Mesa 20.3.4 + OpenCL 2.0 AMD-APP (3188.4), Compiler: GCC 10.2.0 + Clang 11.0.1, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: always

TPL14_CPU

Compiler Notes: --disable-libssp --disable-libstdcxx-pch --disable-libunwind-exceptions --disable-werror --enable-__cxa_atexit --enable-cet=auto --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-default-ssp --enable-gnu-indirect-function --enable-gnu-unique-object --enable-install-libiberty --enable-languages=c,c++,ada,fortran,go,lto,objc,obj-c++,d --enable-lto --enable-multilib --enable-plugin --enable-shared --enable-threads=posix --mandir=/usr/share/man --with-isl --with-linker-hash-style=gnu
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0x8600106
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

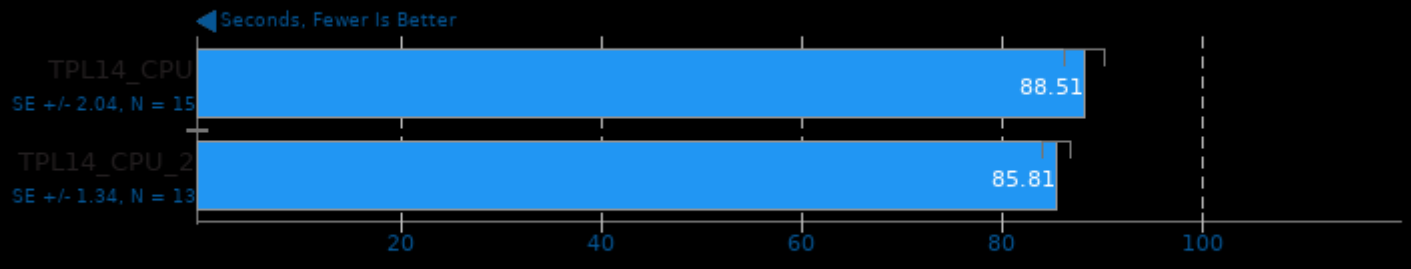
	TPL14_CPU	AMD Ryzen 3 PRO 4450U	TPL14_CPU_2
Rodinia - OpenMP LavaMD (sec)	**88.512**		**85.814**
Normalized	96.95%		100%
Standard Deviation	8.9%		5.6%
Rodinia - OpenMP CFD Solver (sec)	**65.751**		**66.737**
Normalized	100%		98.52%
Standard Deviation	1.2%		0.7%
NAMD - ATPase Simulation - 327,506 Atoms (days/ns)	**6.71262**		**6.37069**
Normalized	94.91%		100%
Standard Deviation	0.5%		0.1%
Kvazaar - Bosphorus 4K - Slow (FPS)	**1.79**		**1.89**
Normalized	94.71%		100%
Standard Deviation	0.3%		0.3%
Kvazaar - Bosphorus 4K - Medium (FPS)	**1.83**		**1.92**
Normalized	95.31%		100%
Standard Deviation	0.3%		0.3%
Kvazaar - Bosphorus 1080p - Slow (FPS)	**7.94**		**8.33**
Normalized	95.32%		100%
Standard Deviation	1.4%		0.7%
Kvazaar - Bosphorus 1080p - Medium (FPS)	**8.13**		**8.52**
Normalized	95.42%		100%
Standard Deviation	1.5%		1.4%
Kvazaar - Bosphorus 4K - Very Fast (FPS)	**5.01**		**5.27**
Normalized	95.07%		100%
Standard Deviation	0.9%		0.7%
Kvazaar - Bosphorus 4K - Ultra Fast (FPS)	**9.13**		**9.57**
Normalized	95.4%		100%
Standard Deviation	1.7%		1.4%
Kvazaar - Bosphorus 1080p - Very Fast (FPS)	**20.78**		**21.78**
Normalized	95.41%		100%
Standard Deviation	2.6%		2%
Kvazaar - Bosphorus 1080p - Ultra Fast	**38.22**		**39.75**
Normalized	96.15%		100%
Standard Deviation	1.8%		2%
x264 - H.2.V.E (FPS)	**33.54**		**34.13**
Normalized	98.27%		100%
Standard Deviation	1.1%		0.5%
x265 - Bosphorus 4K (FPS)	**4.94**		**5.06**
Normalized	97.63%		100%
Standard Deviation	1.1%		0.8%
x265 - Bosphorus 1080p (FPS)	**23.01**		**22.22**
Normalized	100%		96.57%

TPL14_CPU

Standard Deviation	2.3%	1.3%
Stockfish - Total Time (Nodes/s)	**8729537**	**9178874**
Normalized	95.1%	100%
Standard Deviation	2.4%	1.5%
asmFish - 1.H.M.2.D (Nodes/s)	**9406029**	**9598090**
Normalized	98%	100%
Standard Deviation	0.6%	1.8%
POV-Ray - Trace Time (sec)	142.828	
Standard Deviation	0.9%	
OpenSSL - R.4.b.P (Signs/sec)	**884.5**	**886.1**
Normalized	99.82%	100%
Standard Deviation	5.8%	4.5%
ctx_clock - C.S.T (Clocks)	200	200
Standard Deviation		0%
Sysbench - CPU (Events/sec)	**7828**	**7843**
Normalized	99.81%	100%
Standard Deviation	0%	0.1%
Blender - Barbershop - CPU-Only (sec)	**3147**	**3015**
Normalized	95.78%	100%

Rodinia 2.4

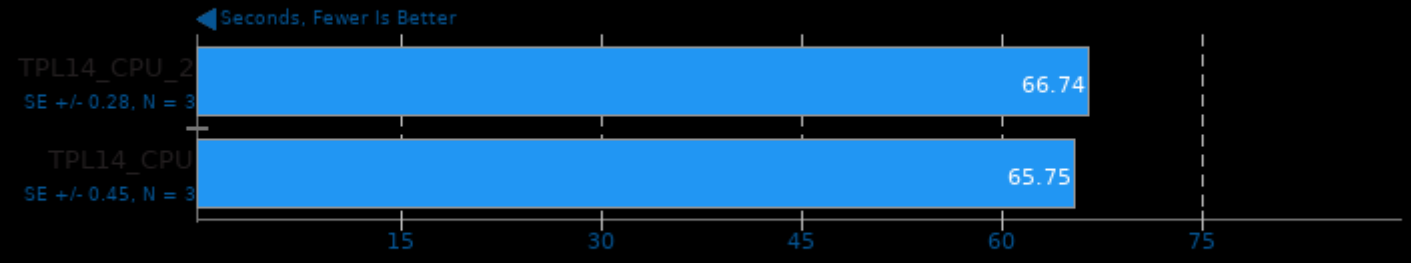
Test: OpenMP LavaMD



1. (CXX) g++ options: -O2 -lOpenCL

Rodinia 2.4

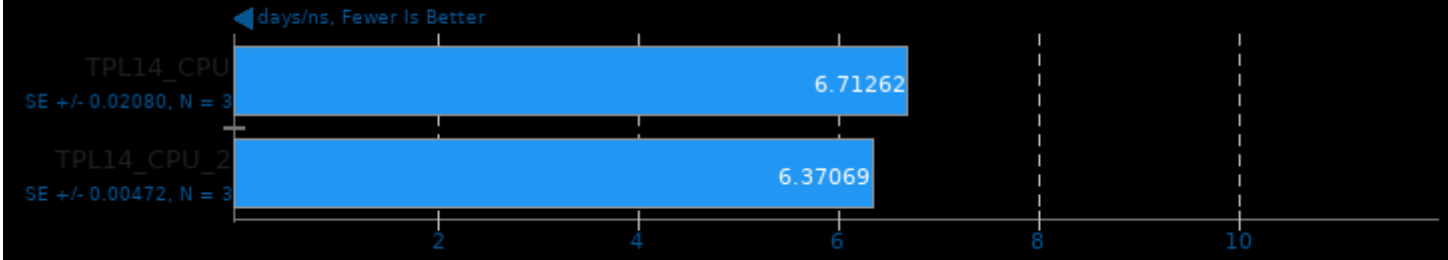
Test: OpenMP CFD Solver



1. (CXX) g++ options: -O2 -lOpenCL

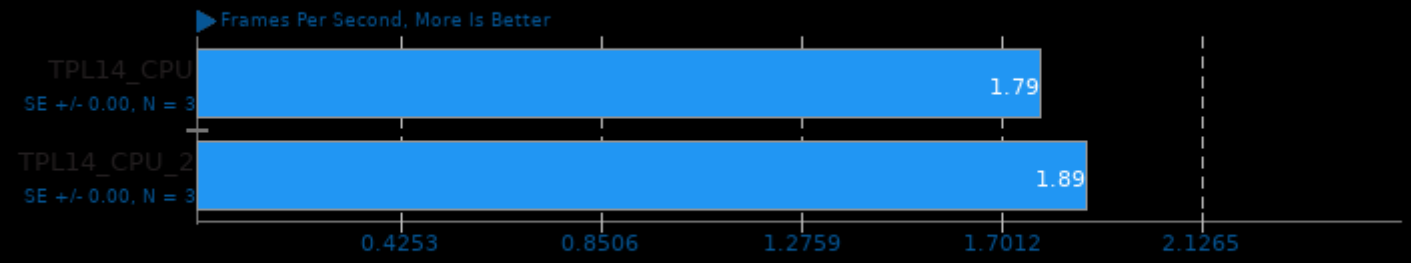
NAMD 2.13b1

ATPase Simulation - 327,506 Atoms



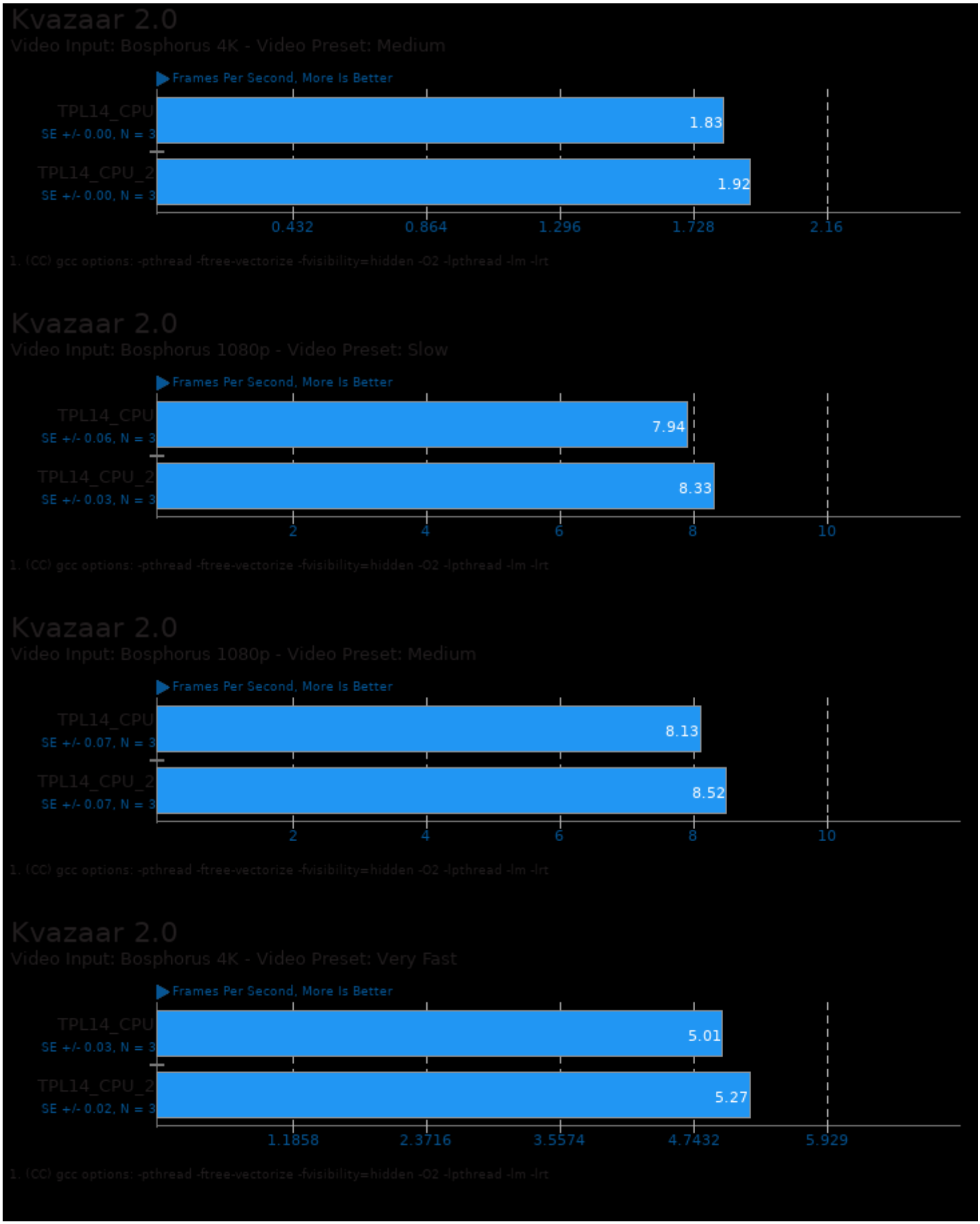
Kvazaar 2.0

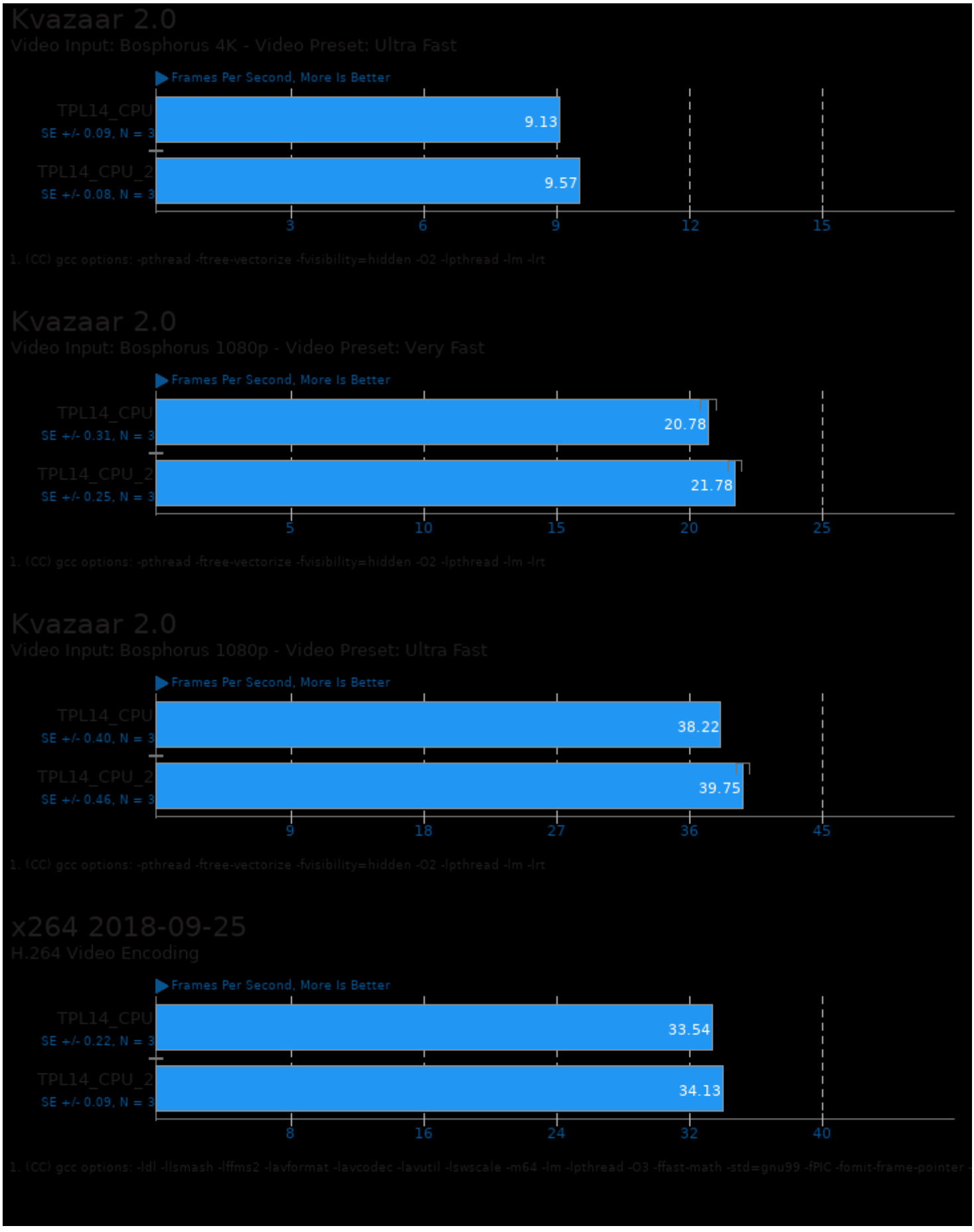
Video Input: Bosphorus 4K - Video Preset: Slow



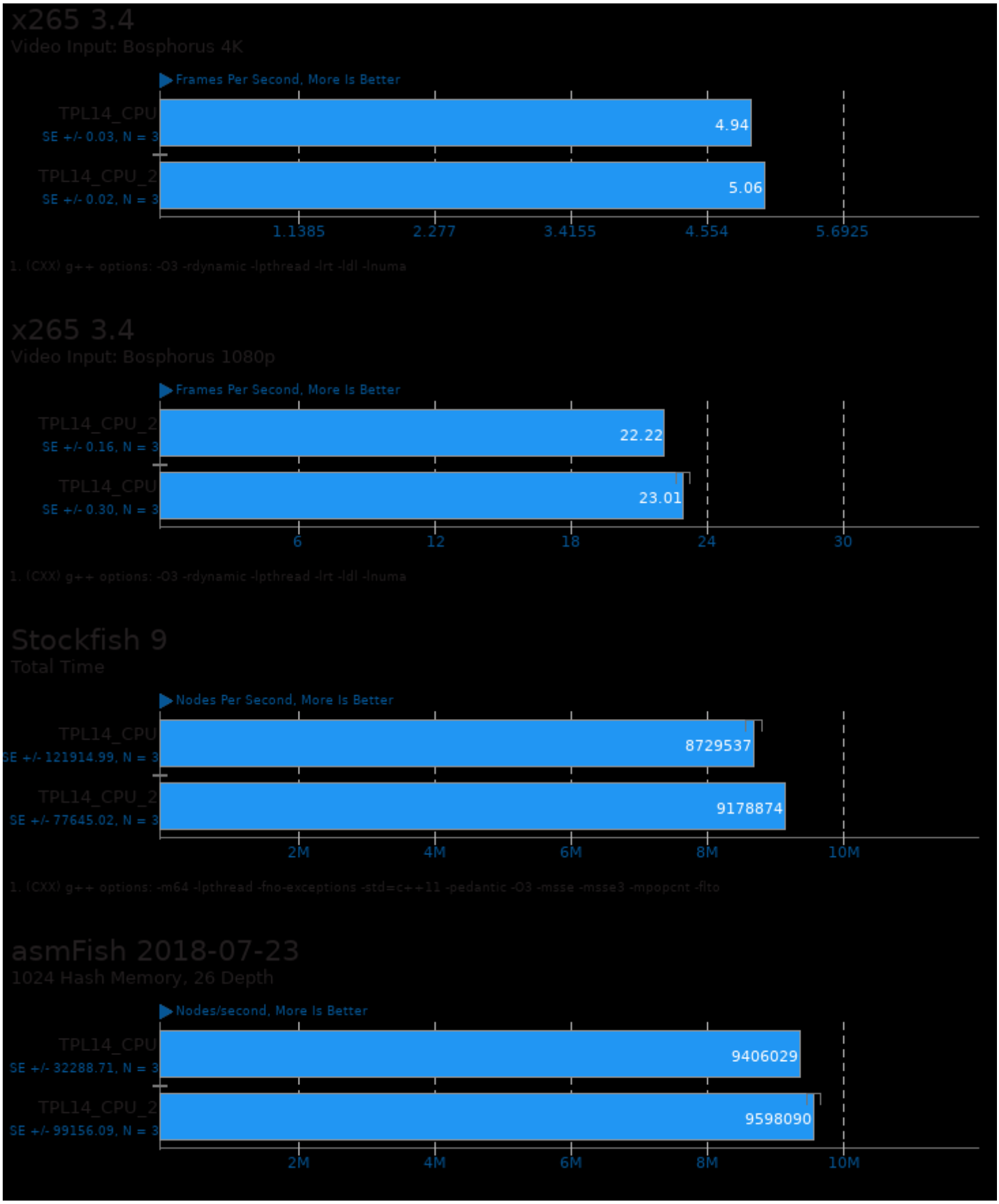
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt

TPL14_CPU


Kvazaar 2.0
Video Input: Bosphorus 4K - Video Preset: Medium
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.00, N = 3
1.83
TPL14_CPU_2
SE +/- 0.00, N = 3
1.92
0.432
0.864
1.296
1.728
2.16
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.0
Video Input: Bosphorus 1080p - Video Preset: Slow
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.06, N = 3
7.94
TPL14_CPU_2
SE +/- 0.03, N = 3
8.33
2
4
6
8
10
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.0
Video Input: Bosphorus 1080p - Video Preset: Medium
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.07, N = 3
8.13
TPL14_CPU_2
SE +/- 0.07, N = 3
8.52
2
4
6
8
10
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.0
Video Input: Bosphorus 4K - Video Preset: Very Fast
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.03, N = 3
5.01
TPL14_CPU_2
SE +/- 0.02, N = 3
5.27
1.1858
2.3716
3.5574
4.7432
5.929
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt


Kvazaar 2.0
Video Input: Bosphorus 4K - Video Preset: Ultra Fast
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.09, N = 3
9.13
TPL14_CPU_2
SE +/- 0.08, N = 3
9.57
3
6
9
12
15
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.0
Video Input: Bosphorus 1080p - Video Preset: Very Fast
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.31, N = 3
20.78
TPL14_CPU_2
SE +/- 0.25, N = 3
21.78
5
10
15
20
25
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
Kvazaar 2.0
Video Input: Bosphorus 1080p - Video Preset: Ultra Fast
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.40, N = 3
38.22
TPL14_CPU_2
SE +/- 0.46, N = 3
39.75
9
18
27
36
45
1. (CC) gcc options: -pthread -ftree-vectorize -fvisibility=hidden -O2 -lpthread -lm -lrt
x264 2018-09-25
H.264 Video Encoding
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.22, N = 3
33.54
TPL14_CPU_2
SE +/- 0.09, N = 3
34.13
8
16
24
32
40
1. (CC) gcc options: -ldl -llsmash -lffms2 -lavformat -lavcodec -lavutil -lswscale -m64 -lm -lpthread -O3 -ffast-math -std=gnu99 -fPIC -fomit-frame-pointer

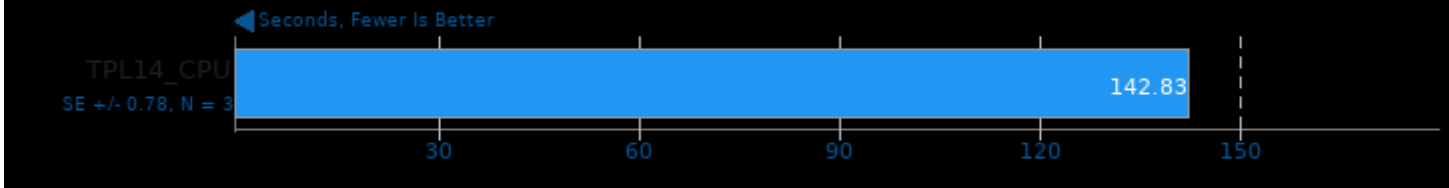
TPL14_CPU


x265 3.4
Video Input: Bosphorus 4K
Frames Per Second, More Is Better
TPL14_CPU
SE +/- 0.03, N = 3
4.94
TPL14_CPU_2
SE +/- 0.02, N = 3
5.06
1.1385
2.277
3.4155
4.554
5.6925
1. (CXX) g++ options: -O3 -rdynamic -lpthread -lrt -ldl -lnuma
x265 3.4
Video Input: Bosphorus 1080p
Frames Per Second, More Is Better
TPL14_CPU_2
SE +/- 0.16, N = 3
22.22
TPL14_CPU
SE +/- 0.30, N = 3
23.01
6
12
18
24
30
1. (CXX) g++ options: -O3 -rdynamic -lpthread -lrt -ldl -lnuma
Stockfish 9
Total Time
Nodes Per Second, More Is Better
TPL14_CPU
SE +/- 121914.99, N = 3
8729537
TPL14_CPU_2
SE +/- 77645.02, N = 3
9178874
2M
4M
6M
8M
10M
1. (CXX) g++ options: -m64 -lpthread -fno-exceptions -std=c++11 -pedantic -O3 -msse -msse3 -mpopcnt -flto
asmFish 2018-07-23
1024 Hash Memory, 26 Depth
Nodes/second, More Is Better
TPL14_CPU
SE +/- 32288.71, N = 3
9406029
TPL14_CPU_2
SE +/- 99156.09, N = 3
9598090
2M
4M
6M
8M
10M

TPL14_CPU

POV-Ray 3.7.0.7

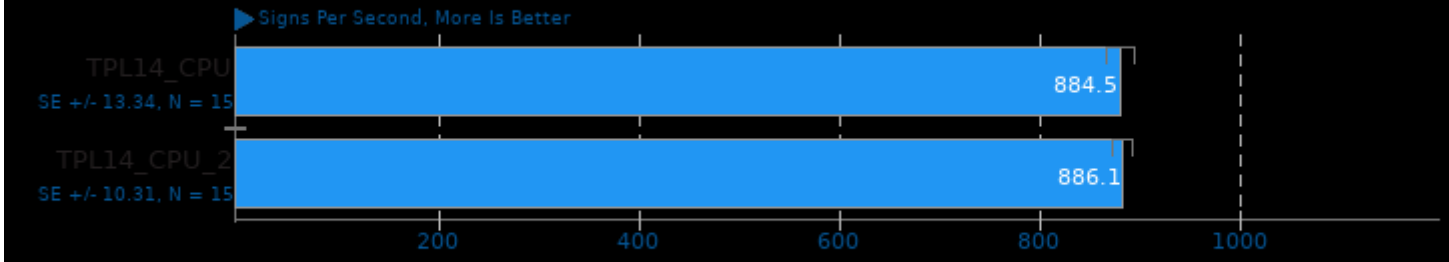
Trace Time



1. (CXX) g++ options: -pipe -O3 -ffast-math -march=native -pthread -lSDL -lpthread -lXpm -lSM -lICE -lX11 -llilmImf -lIlmImf-2_5 -lImath-2_5 -lHalf-2_5 -lIe

OpenSSL 1.1.1

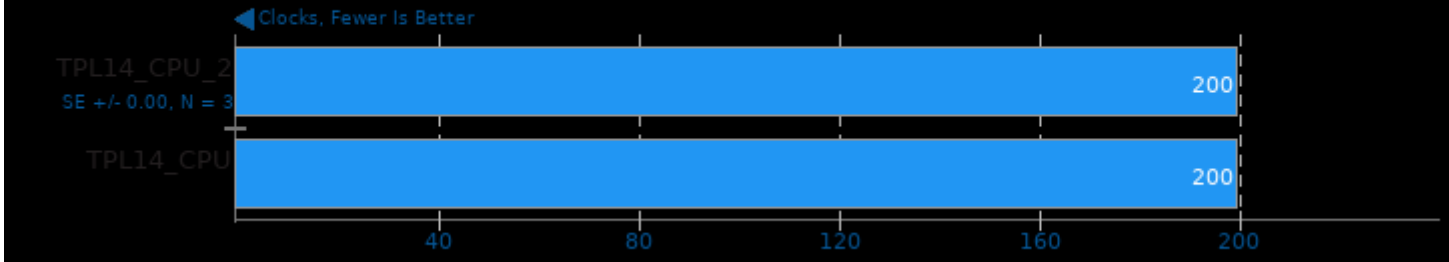
RSA 4096-bit Performance



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

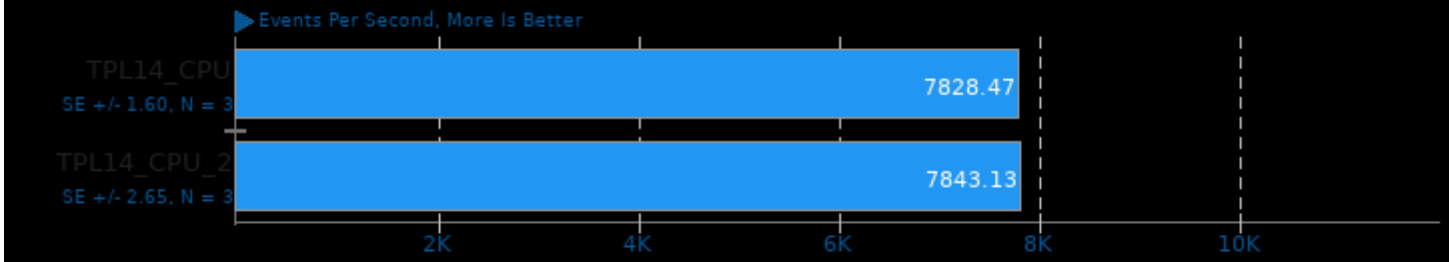
ctx_clock

Context Switch Time



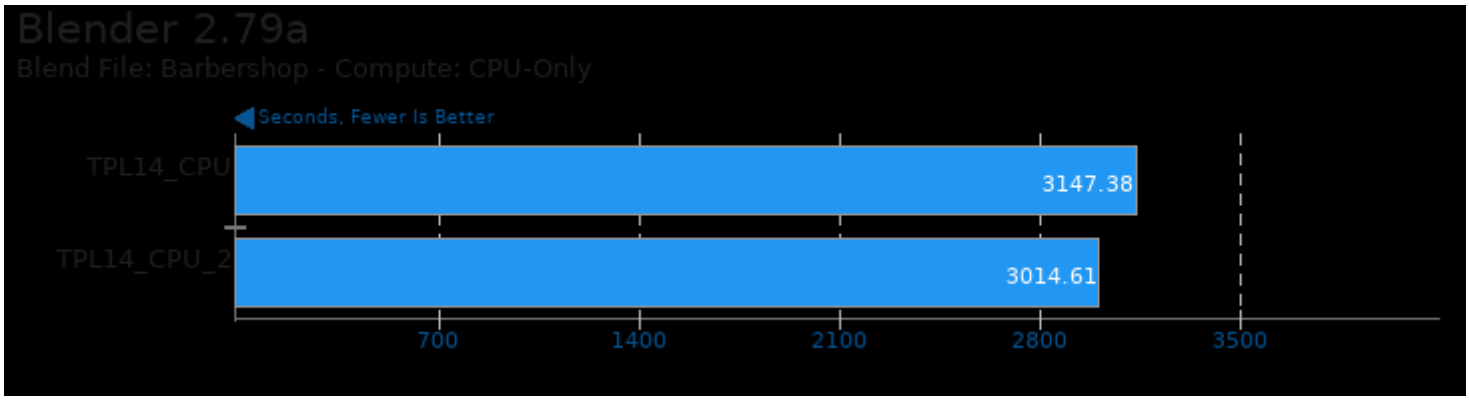
Sysbench 2018-07-28

Test: CPU



1. (CC) gcc options: -pthread -O3 -funroll-loops -ggdb3 -march=amdfam10 -rdynamic -ldl -laio -lm

TPL14_CPU



This file was automatically generated via the Phoronix Test Suite benchmarking software on Thursday, 28 March 2024 22:26.